Urban Warfare

The multi-domain battlefield has become increasingly complex, requiring sophisticated technology and increased cognitive load in tactical operations in the urban environment. Urban warfare is a multi-domain complex environment that includes indoor, outdoor, sub-terrain and high buildings. The enemy is highly mobile, with access to extensive ground infrastructure that interferes or completely blocks GPS signals. The use of airpower is also restricted by the danger of collateral damage and limited attack angles.

Unmanned systems that can maneuver close to targets, scan buildings, automatically identify threats and engage with lethal payloads are critical for building clearance and search-and-strike missions, enabling remote operation in enemy territory and in populated areas, reducing the need to deploy soldiers into dangerous urban areas.

Using robotic platforms in urban warfare for short range and human-machine teaming (HMT) operations to seek and attack targets requires the ability to manage and coordinate autonomous swarms with advanced command, control, intelligence, and firing capabilities.

To increase survivability and enhance situational awareness in urban mission scenarios requires integration of sophisticated technologies, payloads and beyond-line-of-sight capabilities to gather data, relay valuable information, and deliver precision strikes.

The solution: Legion-X

The Legion-X robotic and autonomous system enables control and coordination of a networked group of heterogeneous autonomous systems that can act as a cohesive unit and individually, as part of an overall combat network system. Modular, flexible and scalable, the advanced control solution enables combat teams and expeditionary units to deploy, operate and manage connected human-machine formations, leveraging advanced technologies to gain a tactical advantage.

A comprehensive, all-in-one system for planning, operation and management of unmanned platforms, Legion-X meets the evolving challenges of force protection in the modern battlefield, with core capabilities that increase survivability and mission success.

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Legion-X Operational Capabilities

Urban Warfare

Legion-X offers a highly maneuverable building clearance and search-and-strike solution featuring exterior and indoor operational modes for observation, detection, and urban fighting based on human-machine collaboration. The urban warfare solution enables control of combat swarms of ground robotic platforms with weapon stations and heterogeneous drones including indoor loitering ammunition for street surveillance and search and destroy missions.

An autonomous mission management tool, Legion-X incorporates highly maneuverable drone-based loitering weapon systems and aerial observation and search UAVs with EO detection, radar, and automatic target recognition (ATR). The solution can be operated directly or with a pre-determined mission plan, for all urban mission scenarios:

- Plans route and monitors mission execution
- Scans building exterior for openings
- Indoor operation mode for search after breaching
- Maps building interior, human threat identification and classification
- Lethal and non-lethal payloads for strike and search.
- Man-in-the-loop for engagement and fire procedure approval

Systems and products:
The Urban Warfare kit enables scanning and clearing buildings in an urban environment. The autonomous CONOPs can be easily enhanced to support different tactical drills and human-machine teaming interactions. The robotic strikers require human approval to engage with targets and threats.

The kit includes:

- 4 scanners (observers) - UAVs (e.g., Magni/Falcon) with EO/IR cameras - 2x2 shifts to allow for hot-swap for maintaining constant operation
- 2 target acquisition - UAVs (e.g., Magni/Falcon) with EO/IR payload with/without laser designator – 1x2 shifts to allow for hot-swap for maintaining constant operation
- 2 UAV LANIUS Carrier – each carrier carries 3 LANIUS (indoor loitering ammunition) – 1X2 shifts to allow for redundancy
- 1 UGV (ROOK) with a remote weapon system and bird cage
- Legion-X Comms kit
- Legion-X AM-PM autonomous mission management application
- End user devices (2x tactical tablets)

Scanner (observer): UAVs (e.g., Magni/ Falcon) with EO/IR payload (e.g., Nighthawk/Chimera/Sony)- Area of interest coverage, detects, classifies and tracks ground objects.

Target acquisition: UAVs (e.g., Magni/Falcon) with EO/IR (e.g., Controp›s payloads or similar payload) - automatic target tracking (ATR) and target acquisition (CAT2).

Indoor strikers: Indoor loitering ammunition (LANIUS) carried by a larger UAV .

Ground striker: UGV (ROOK) high mobility, multi-purpose 6x6 unmanned ground vehicle (UGV) carries Remote Weapon System (RWS) and the indoor strikers.

Legion-X AM-PM HMI: Autonomous mission planning and execution, displays all system components including detections, map location, swarm status, mission status and control. Legion-X AM-PM allows a single user to plan and monitor the automatic execution of the scan and discover mission.

Legion-X Comms: A secure (AES 256) communication that allows BVLOS operation of the force protection swarm on the move.

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